

CLAIMS

1. A method for renewing software in a software-controlled machine, comprising the steps of providing said software-controlled machine with a sensor means and an operation control circuit connected to said sensor means, and providing the operation control circuit with renewal control program;

detecting external command information by said sensor means to shift the operation control circuit from an operating mode to a renewal mode;

detecting external operating data on software by said sensor means;

storing the operating data in the operation control circuit of the renewal mode for renewal of the software in accordance with said renewal control program;

shifting the operation control circuit from the renewal mode to the operating mode; and

operating the machine with the renewed operating data.

2. A method for renewing software in a software-controlled machine of claim 1, further comprising writing said command information and operating data respectively on a command card and an information card;

first reading said command information on said command card and then reading said operating data on said information card.

3. A method for renewing software in a software-controlled machine of claim 1, further comprising conveying the command information and operating data with electromagnetic wave to the sensor means.

4. A method for renewing software in a software-controlled machine of claim 2, wherein said software-controlled machine is a validator with an inlet, said sensor means is an optical or magnetic sensor;

the reading process of the command information comprises inserting the command card into the inlet; reading command information from the command card by said sensor means, and discharging the command card from the validator;

the reading process of the operating data comprises inserting said information card to the inlet, reading operating data contained in said information card by said sensor means to store the operating data in a program memory in accordance with said renewal control program, and discharging the information card from the validator;

after completion of storing the operating data, shifting the operation control circuit from the renewal mode to the operating mode to validate bills utilizing the renewed operating data.

5. A method for renewing software in a software-controlled machine of claim 4, wherein the reading process of the command information further comprises deciding by the operation control circuit whether an insert into the inlet is a genuine bill or the command card, shifting the operation control circuit from the operating mode to the renewal mode when the operation control circuit recognizes the insert as the command card in view of the read information;

wherein the reading process of the operating data comprises deciding by the operation control circuit whether an insert into the inlet is a genuine bill, command card or the information card; storing the operating data in the operation control circuit in accordance with said renewal control program when the operation control circuit recognizes the insert as the information card in view of the read information.

6. A method for renewing software in a software-controlled machine of claim 2, wherein the operating mode of the operation control circuit of the validator comprises detecting an insert entered into the inlet of the validator by an inlet sensor; driving a conveyer means in response to an output of said inlet sensor to transport the insert

along a passageway inside the validator; detecting optically or magnetically characteristic of the transported insert by said sensor means; and further moving the insert in the back of said sensor means of the validator when the operation control circuit in the operating mode decides that the inserts a genuine bill.

7. A method for renewing software in a software-controlled machine of claim 2, further comprising producing a signal from an alarm device to indicate the renewal mode.

8. A method for renewing software in a software-controlled machine of claim 6, further comprising driving said conveyer means in the adverse direction to return the paper to the inlet when the operation control circuit in the operating mode decides that the paper is not a genuine bill.

9. An apparatus for renewing software in a software-controlled machine, comprising an operation control circuit having software for controlling said machine and renewal control program for storing operating data as new software;

a sensor means connected to said operation control circuit;

a first medium containing command information which shifts the operation control circuit from an operating mode to a renewal mode when the sensor means detects the command information externally given to the sensor means; and

a second medium containing operating data which is stored in the program memory for renewal of the software in accordance with said renewal control program during the renewal mode when said sensor means detects the operating data externally given to the sensor means;

the operation control circuit being shifted from the renewal mode to the operating mode after completion of storing the operating data to operate the machine with the renewed operating data.

10. An apparatus for renewing software in a software-controlled machine of claim 9, wherein said first medium is a command card, and said second medium is an information card; said sensor means first reads the command information on said command card, and then reads the operating data on the information card.

11. An apparatus for renewing software in a software-controlled machine of claim 10, wherein said command card and information card are made into a combined card including the command information and operating data.

12. An apparatus for renewing software in a software-controlled machine of claim 9, further comprising at least a transmitter for conveying the command information and operating data with electromagnetic wave to the sensor means.

13. An apparatus for renewing software in a software-controlled machine of claim 10, wherein said software-controlled machine is a validator with an inlet, said sensor means is an optical or magnetic sensor;

said sensor means reads the command information from the command card to shift the operation control circuit from the operating mode to the renewal mode;

said sensor means reads the operating data from the information card to store the operating data in the program memory in accordance with said renewal control program.

14. The apparatus of claim 10, wherein the operating data is read out from the information card by the sensor means; the operating data includes information necessary to discriminate at least one of the optically or magnetically characteristic patterns of papers, kinds of papers to be discriminated by the validator, operating software for controlling the operating sequence of the validator, acceptable criterion of

papers by the validator, requirement for adjusting the sensor means, maintenance data of the validator and an identification number of a main device equipped with the validator.

15. The apparatus of claim 10, wherein said operation control circuit comprises an analytical program for analyzing the operating data read out from the information card; a program memory for storing the operating data read out from the information card; and an operating software for operating the operation control circuit in accordance with the renewed software in the program memory.

16. The apparatus of claim 10, further comprising an inlet sensor for detecting an insert entered into an inlet of said validator; and a conveyer means for transporting the insert along a passageway in response to an output of said inlet sensor;

said operation control circuit receives the output signal of said sensor means to validate whether the insert is a genuine bill,

whereby said operation control circuit controls the conveyer means to transport the insert along the passageway and further move the insert when the operation control circuit recognizes the insert as a genuine bill.

17. The apparatus of claim 10, wherein each of the command cards is used to individually correspond to a different kind of the operating data, and each of the information cards is used to correspond to each command card inserted into the inlet.

18. The apparatus of claim 10, further comprising an alarm device disposed in the vicinity of the inlet for producing a signal indicative of the renewal mode.